

Claim 1

In claim 1, Applicants recite calculating a correction wavefront aberration compensating for the wavefront aberration; and designing by using at least a plurality of optical parameters, a second temporary optical device for optimizing a form so as to exhibit the correction wavefront aberration. Applicants respectfully submit that there is no calculation of a correction wavefront aberration which compensates for wavefront aberration in '344. Instead, '344 measures optical properties of the lens and compares them to preset or requested optical properties of the lens. Such requested optical properties are in table T as discussed above.

The Examiner has cited paragraph [0027] of '344. This paragraph relates to comparison of optical properties, and does not disclose calculating a correction wavefront aberration compensating for the wavefront aberration as claimed. Applicants' specification at pages 6 and 7 in paragraphs [0030] through [0033] describes the measurement of a wavefront aberration amount (Δ) and the calculation of the correction wavefront aberration amount ($-\Delta$). In Applicants' invention, Δ is wavefront aberration amount. Δ is not related in any way compared to a predetermined optical property or an optical property that is determined beforehand such as that of Table T in '344. Applicants have no table, and no comparison of a predetermined optical property to an actual measured property.

Instead, Applicants, as in claim 1, measure a wavefront aberration of the first temporary optical device. Based upon this measurement, a correction wavefront aberration for compensating for the wavefront measured in the previous step is performed. In these steps, Applicants directly measure the wavefront aberration and then calculate the correction. This process is set forth in Applicants' Figure 1, and particularly in step 4 of Figure 1, where the calculated correction wavefront aberration amount ($-\Delta$) is demonstrated. There is no

teaching or any anticipation of this unique approach to designing of a lens which is based upon correcting the actual wavefront aberration amount.

The '344 reference also does not meet the requirements of claim 1 which in line 3 recites using a plurality of optical parameters, and which in line 3 up from the bottom has a step of using at least the plurality of optical parameters in a second temporary optical device for optimizing a form as to exhibit the correction wavefront aberration. In '344, at paragraph [0033] cited by the Examiner, it states only that the shaping of return of an objective lens is performed to step s2 by the design shaping metal mold 2 (see machine translation). However, in the discussion preceding paragraph [0033], it is seen that when comparing optical properties to the conditions previously set in table T, there is only a single comparison of a single value of an optical property. There is never any suggestion in '344 of changing the mold design using at least the plurality of optical parameters as claimed. In '344, it is described in paragraphs [0030] and [0031] which is an adjustment or a correction quantity for the mold referencing to the table. The table is for a particular optical property or characteristic, and not for the plurality of parameters as claimed.

In '344, since the correction value is determined based upon the table which is set up or determined beforehand, it is only possible to correct deviation elements which are predicted or specified before a temporary optical device is made. Even if in '344, it is applied to elements other than the minute change in quantity of the high order part among aspherical constants (as described in [0027] through [0031]), only individual deviation elements are corrected. This does not provide changing a plurality of elements simultaneously as set forth in Applicants claim 1.

New Design


As explained above, in '344, the optical property (characteristics) are set up beforehand. On the other hand, in Applicants invention, the optical device is newly designed,

and all round correction including deviation elements are taken into account using all of the parameters for the optical design. In the invention where there is a calculation of a correction of wavefront aberration compensating for the actual wavefront aberration measured provides a high precision of correction. Stated another way, the design of '344 can never be better than the optical property which is determined beforehand. Even if the deviation from the predetermined optical property (table T) is zero, the design will never be better than that which is predetermined in accordance with table T.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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Attachments:

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